Cisco – PIX Hardware Troubleshooting

Table of Contents

PIX Hardware Troubleshooting **1**
- Introduction 1
  - Prerequisites 1
  - Hardware and Software Versions 2
- PIX Boot Sequence 2
- Identifying the Issue 3
  - PIX Hang 4
  - PIX Crash 4
  - PIX Crash and Boot Loop 4
- Example System Messages 5
  - Normal PIX Operation 5
  - non−PIX−1GE−66 Message on the PIX 6
  - Only One NIC Used 6
- Summary 7
- Related Information 7

PIX Hardware Troubleshooting

Introduction

Prerequisites
Hardware and Software Versions **PIX Boot Sequence**
Identifying the Issue

PIX Hang
PIX Crash
PIX Crash and Boot Loop
Example System Messages

Normal PIX Operation
non−PIX−1GE−66 Message on the PIX
Only One NIC Used
Summary
Related Information

Introduction

This document helps troubleshoot potential hardware issues with the Cisco Secure PIX Firewall series. It can help to identify which component may be causing a hardware failure, depending on the type of error that the PIX is experiencing. PIX does not support Online Insertion and Removal (OIR) and needs a minimum of two interfaces for normal operation.

Prerequisites

Readers of this document should consider the following:

- Identify the software version running on the PIX. Use the **show version** command to determine the software release on the PIX.

  Tip: Connect your PC to the console port of the PIX using a rolled cable, and apply the correct terminal emulator settings for console connections.

- Identify the PIX model.

  If you are running software version 5.0(1) or later, you can find the model by using the **show version** command.

```
pixfirewall(config)# show version

Cisco PIX Firewall Version 6.2(1)
...
<output deleted for brevity>...
pixfirewall up 22 hours 15 mins
Hardware:   PIX−515, 32 MB RAM, CPU Pentium 200 MHz
```

  If you are running a software version below 5.0(1), look at the physical unit to see what model it is. Hardware installation guides for the respective software versions contain screen shots of various PIX

models.

- How long did the PIX work before you started having trouble?
- What has changed (RAM upgrade, software upgrade) since the PIX last worked?

Hardware and Software Versions

The information in this document applies to all Cisco Secure PIX Firewall series including the platforms listed below:

- 501
- 506/506E
- 510
- 520
- 515/515E
- 525
- 535

PIX Boot Sequence

This section describes the steps that a PIX completes when it is powered on. Use it to verify that the basic PIX hardware components are working correctly to ensure minimal operation.

For a PIX that is is functioning normally, the following sequence of events takes place when the PIX is powered on. Follow the steps in the order listed, using the suggested solutions listed below to help you resolve any issues.

1. Fan starts operating.
2. Console messages start appearing.
3. Power LED is lit.
4. Console prompt is seen.
5. ACT and/or Network LED on Network Interface Card(s) (NICs) is lit.

You may also want to verify the following:

- Does the disk drive work (for earlier PIX models with disk drives)?
- Does the drive light come on (for earlier PIX models with disk drives)?
- Is the problem observed with no or light traffic through the PIX?

Suggested Solution if Fan Does Not Start Operating

- Check the power source and the power switch on the PIX.
- Try changing power outlets.

- If you are using an Uninterrupted Power Supply (UPS), verify whether or not the PIX works if it is *not* connected to a UPS.
- Try another device in the suspect outlet.

Suggested Solution if Console Messages Do Not Appear

- Is the console cable the correct one? To make sure it's the correct one, check whether or not the console cable and the PC serial port work on another device, such as a Cisco IOS® router. If another device is not available, compare the ends of the cable side by side. The cable should be rolled, with the wire colors exactly reversed. If necessary, also check whether or not the console port works with a different PC.
- Apply the correct terminal emulator settings for console connections.
- The memory in the PIX might not be seated properly. If this is the case, the fan functions but the PIX itself does not. Verify that the memory is seated properly.
- Check whether or not the PIX finds the flash and RAM at this stage. See the sample output for PIX under normal operation.

If you still have issues after checking the above, you might have a faulty unit.

Suggested Solution if Power LED Is Not Lit.

- Check the power source. If the fan is operating but the LED is not lit, it could be an LED issue.

Suggested Solution if ACT and/or Network LED on NIC Card(s) Is Not Lit.

- Check whether or not the network cable is connected.
- Make sure a straight through cable is used for hub or switch connection; otherwise a crossover cable is used.
- Try changing cables.
- Try reseating/swapping the NICs.
- If there are more than two NICs, does the PIX boot without problem when the third NIC is removed or if the NICs are swapped?
- If you are still having troubles, check for any Field Notices available for your NIC or PIX Firewall model.

Identifying the Issue

In powering on, the PIX may experience one of the following possible issues:

- PIX Hang − There is no output on the serial console, such as no PIX EXEC prompt or no response to input on the serial console.

- PIX Crash − The PIX experiences a reboot or reload while either doing a specific action or randomly.
- PIX Crash and Boot Loop − The PIX can be stuck in a continuous loop with an error message scrolling.

PIX Hang

If you suspect a PIX hang, check to see if any specific event, such as a high load, may have caused the hang. In such a case, a reload normally clears the problem.

If the PIX hangs frequently, capture the output of the **show traffic** command at regular intervals. Note that you should issue a **clear traffic** command on the PIX prior to collecting these statistics. Submit this information to the Cisco TAC by opening a TAC case.

PIX Crash

A PIX crash refers to a situation where the system has detected an unrecoverable error and has restarted itself. When the PIX reboots, it returns to a normal state. A normal state means that the PIX is functional, passing traffic, and that you are able to gain access to the PIX.

You can confirm whether a PIX rebooted by issuing the **show version** command and looking for the uptime. To check why the PIX rebooted, attach a PC to the console of the PIX Firewall. This enables capturing of the log messages (typically called tracebacks) the next time the PIX reboots. An example traceback is shown below:

```
Traceback:
0: 8010278c
1: 80094107
2: 8009beb6
3: 800a5389
4: 800a95fb
5: 8008f9c4
6: 8000279b
7: 00000000
<output deleted for brevity>
```

Customers can look for any known bugs for the *specific PIX software release* you are running using the Bug Toolkit (registered customers only). Compare the traceback with that of the bug to see if they are same. If a fix is available, upgrade the PIX to the software release in which the fix is present. If a bug fix is not available, or if you don't find anything related in the Bug Toolkit, open a TAC case with the information you gathered in the above section. Please capture the complete traceback before opening the case.

PIX Crash and Boot Loop

When a PIX experiences a continuous/boot loop, you cannot gain access to the PIX and error messages will scroll until the unit is powered off. A continuous loop may be due to a hardware issue. The Example System Messages section below shows an example of a good boot and two examples of a bad boot due to hardware problems.

Customers can look for any known bugs for the *specific PIX software release* you are running using the Bug Toolkit (registered customers only). Compare the traceback with that of the bug to see if they are same. If a fix is available, upgrade the PIX to the software release in which the fix is present. If a bug fix is not available, or if you don't find anything related in the Bug Toolkit, open a TAC case with the information you gathered in the above section. Please capture the complete traceback before opening the case.

Example System Messages

Normal PIX Operation

The following is sample output from a PIX 515 booting under normal operation:

```
PhoenixPICOBIOS 4.0 Release 6.0
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Build Time: 04/27/99 17:08:34
Polaris BIOS Version 0.09
CPU = Pentium with MMX  200 MHz
640K System RAM Passed
31M Extended RAM Passed
0512K Cache SRAM Passed
System BIOS shadowed
PIX BIOS (4.0) #38: Tue Apr 27 12:45:23 PDT 1999
    timhahn@irp−view5:/vws/dry/timhahn/trunk/loader
Platform PIX−515
Flash=i28F640J5 @ 0x300

Use BREAK or ESC to interrupt flash boot.
Reading 1528320 bytes of image from flash.
############################################################################################
#
32MB RAM
Flash=i28F640J5 @ 0x300
BIOS Flash=AT29C257 @ 0xfffd8000
mcwa i82559 Ethernet at irq 11  MAC: 0050.54fe.ea30
mcwa i82559 Ethernet at irq 10  MAC: 0050.54fe.ea31
mcwa i82558 Ethernet at irq  7  MAC: 0090.2742.fbbe

  ____________________________________________________________________________
                               ||        ||
                               ||        ||
                              ||||      ||||
                          ..:||||||:..:||||||:..
                         c i s c o S y s t e m s
                        Private Internet eXchange
  ____________________________________________________________________________
                        Cisco PIX Firewall

Cisco PIX Firewall Version 6.2(1)
Licensed Features:
Failover:           Enabled
VPN−DES:            Enabled

VPN−3DES:           Enabled
Maximum Interfaces: 6
Cut−through Proxy:  Enabled
Guards:             Enabled
URL−filtering:      Enabled
Inside Hosts:       Unlimited
Throughput:         Unlimited
IKE peers:          Unlimited


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Cryptochecksum(unchanged): d32550f0 c52eaa1b 952dabc8 6e7b6ea3
199002: PIX startup completed.  Beginning operation.
Type help or '?' for a list of available commands.
```

non−PIX−1GE−66 Message on the PIX

```
WARNING: A non−PIX−1GE−66 Gigabit Ethernet card was found in slot 0.
WARNING: This combination is not recommended and will reduce the overall
WARNING: performance of the system.  Remove this card and replace it with
WARNING: a PIX−1GE−66 Gigabit Ethernet card for optimal performance.
```

Solution: This message can be seen if a 33 MHz Gigabet Ethernet card is used in a 66 MHz bus slot. It will not appear on a PIX 535 unit as shipped from Cisco but can appear if the slower card has been moved from a 33 MHz bus slot on the left to one of the four 66 MHz bus slots on the right. For performance reasons, only 66 MHz cards should be used in these 66MHz bus slots.

Only One NIC Used

```
An internal error occurred.  Specifically, a programming assertion was
violated.  Copy the error message exactly as it appears, and get the
output of the show version command and the contents of the configuration
file.  Then call your technical support representative.

assertion "PifCount >= 2 &PifCount <= MAX_PIFS" failed: file "pixmain.c",
line 219

An internal error occurred.  Specifically, a programming assertion was
violated.  Copy the error message exactly as it appears, and get the
output of the show version command and the contents of the configuration
```

```
file.  Then call your technical support representative.

Assertion"(unsigned)ifc < PifCount" failed: file "pixmain.c", line 547
Panic: pix/intf1 − Cannot open interface card 1 (en_3com/1)
0x807c14c8: 0x00000000
0x807c14c4: 0x00000001
0x807c14c0: 0x80069e1c
0x807c14bc: 0x00000000

<output deleted for brevity>
```

Solution: Use a minimum of two interfaces.

Summary

If you have identified a component that needs to be replaced, contact your Cisco partner or reseller to request a replacement for the hardware component that is causing the issue. If you have a support contract directly with Cisco, use the Cisco.com Case Open Tool to open a TAC case and request a hardware replacement. Make sure you attach the following information:

- Console captures showing the complete error messages or tracebacks.
- Console captures showing the troubleshooting steps taken and the boot sequence during each step.
- The hardware component that failed and the serial number for the chassis.
- Troubleshooting logs.
- Output from the **show tech** command.

If you have been unable to identify your hardware issue in this document, please refer to PIX 500 Series Firewalls Field Notices to look at additional known hardware problems.

Related Information

- **PIX Support Page**
- **Documentation for PIX Firewall**
- **PIX Command Reference**
- **Requests for Comments (RFCs)**

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